What is claimed is:

1. A retinal imaging system comprising:

a light source;

optics which receive light from the light source and which transmit the light to produce a beam that is substantially convergent, the beam penetrating a lens of an eye and diverging following penetration of the lens to illuminate an area of a retina of the eye; and

an imaging device that receives a reflection of light from the retina.

2. The retinal imaging system of claim 1, wherein the optics comprise a beam splitting device that allows transmission of at least part of the light away from the eye.

3. The retinal imaging system of claim 2, further comprising:

a darkened region for absorbing the part of the light transmitted away from the eye.

4. The retinal imaging system of claim 1, further comprising:

a surface containing an aperture that is positioned in front of the eye for blocking at least some Purkinje reflections and corneal reflections from the eye.

5. The retinal imaging system of claim 4, wherein the surface is covered, at least in part, with a non-reflective material.

6. The retinal imaging system of claim 1, further comprising:

surfaces that form an aperture located between the light source and the optics, the aperture limiting an angle of the light to reach the optics.

7. The retinal imaging system of claim 1, further comprising a series of surfaces that form a series of apertures located between the light source and the optics, the series of apertures limiting an angle of the light to reach the optics.

8. The retinal imaging system of claim 1, further comprising rilling located along a path the light takes between the light source and the optics.

9. The retinal imaging system of claim 1, further comprising a stereo filter located on an optical path between the eye and the imaging device, the stereo filter comprising an area for transmitting a first portion of imaging rays from the eye and an area for blocking a second portion of the imaging rays.

10. The retinal imaging system of claim 9, wherein the first portion of imaging rays comprise rays obtained at a first angle from a point on the retina, and the second portion of imaging rays comprise rays obtained at a second angle from the point on the retina.

11. The retinal imaging system of claim 1, further comprising:

at least one housing that holds the light source, the optics, and the imaging device; and

a mechanism for positioning the at least one housing relative to the eye.

12. The retinal imaging system of claim 1, further comprising:

a housing that holds at least part of the optics, the housing being movable to change the area of the retina that is illuminated.

13. The retinal imaging system of claim 1, wherein the light source comprises:

light emitting diodes having different colors; and optical fiber arranged to receive light from at least one of the light emitting diodes.

14. An ophthalmoscope comprising:

optics which direct light into a predetermined portion of an eye that is not used for imaging, the optics shaping the light so that the light is substantially convergent as the light goes through a lens of the eye and so that the light diverges following penetration of the

lens to illuminate an area of a retina of the eye; and an imaging device that captures images of the retina.

15. The ophthalmoscope of claim 14, wherein the optics comprise a beam splitting device that transmits at least part of the light away from the eye.

16. The ophthalmoscope of claim 15, further comprising:
a darkened region for absorbing the part of the light transmitted away from the eye.

17. The ophthalmoscope of claim 18, further comprising:
a surface containing an aperture that is positioned in front of the eye for blocking at least some Purkinje reflections from the eye.

18. The ophthalmoscope of claim 17, wherein the surface is covered, at least in part, with a non-reflective material.

19. The ophthalmoscope of claim 14, further comprising:
a light source that provides the light to the optics; and
surfaces that form an aperture located between the light source and the optics, the aperture limiting an angle of the light to reach the optics.

20. The ophthalmoscope of claim 14, further comprising a series of surfaces that form a series of apertures located between the optics and a source of the light, the series of apertures limiting an angle of the light to reach the optics.

21. The ophthalmoscope of claim 14, further comprising rilling located along a path the light takes between a source of the light and the optics.

22. The ophthalmoscope of claim 14, further comprising a stereo filter located on an optical path between the eye and the imaging device, the stereo filter comprising an area

for transmitting a first portion of imaging rays from the eye and an area for blocking a second portion of the imaging rays.

23. The ophthalmoscope of claim 22, wherein the first portion of imaging rays comprise rays obtained at a first angle from a point on the retina, and the second portion of imaging rays comprise rays obtained at a second angle from the point on the retina.

24. The ophthalmoscope of claim 14, further comprising:

a light source that provides the light to the optics;

at least one housing that holds the light source, the optics, and the imaging device; and

a mechanism for positioning the at least one housing relative to the eye.

25. The ophthalmoscope of claim 14, further comprising:

a housing that holds at least part of the optics, the housing being movable to change the area of the retina that is illuminated.

26. The ophthalmoscope of claim 14, further comprising a light source, the light source comprising:

light emitting diodes having different colors; and

optical fiber arranged to receive light from at least one of the light emitting diodes and to deliver the light to the optics.

27. A retinal imaging apparatus, comprising:

means for producing convergent light and for directing the convergent light to a lens of an eye so that the convergent light diverges following penetration of the lens and illuminates a retina of the eye;

means for capturing an image of the retina; and

means for selectively blocking light reflected from the retina from the means for capturing.

28. A retinal imaging system comprising:

an illumination path which receives light, and causes the light to penetrate a pupil of an eye at a spot on the pupil, the light exiting the lens to illuminate an area of a retina of the eye; and

an imaging path which receives reflected light from the area of the retina and which transmits the reflected light to an imaging device, the imaging path containing surfaces that define apertures to reduce Purkinje reflections and to reduce reflections from an iris of the eye, the imaging path containing a stereo filter having one area for passing a first portion of the reflected light and another area for blocking a second portion of the reflected light.

29. The retinal imaging system of claim 28, further comprising:

a base on which the illumination path and the imaging path are mounted, the base providing five degrees of freedom of motion for the retinal imaging system.

30. The retinal imaging system of claim 29, wherein the base comprises a slit lamp base.

31. The retinal imaging system of claim 28, wherein the illumination path comprises a beam splitting device that transmits at least part of the light away from the eye.

32. The retinal imaging system of claim 31, further comprising:

a darkened region for absorbing the part of the light transmitted away from the eye.

33. The retinal imaging system of claim 28, wherein the illumination path comprises a series of surfaces that form a series of apertures located along the illumination path, the series of apertures limiting an angle of the light to reach the eye.

34. The retinal imaging system of claim 28, further comprising rilling located along the illumination path.

35. The retinal imaging system of claim 38, wherein the first portion of reflected light comprises light reflected at a first angle from a point on the retina, and the second portion of reflected light comprises light reflected at a second angle from the point on the retina.

36. The retinal imaging system of claim 28, further comprising:

a light source comprised of different color diodes which provide the light to the illumination path.

37. The retinal imaging system of claim 28, further comprising:

a beam splitter that transmits at least part of the light from the illumination path away from the eye.

38. A method comprising:

generating convergent light via an illumination path of a retinal imaging system;

directing the convergent light through an illumination portion of an eye, the illumination portion of the eye being segregated from an imaging portion of the eye;

receiving reflected light via the imaging portion of the eye;

passing the reflected light through an imaging path to an image capturing device; and

producing an image based on the reflected light.

39. The method of claim 38, further comprising:

selectively blocking a portion of the reflected light to produce a stereo image of the eye.

40. The method of claim 39, wherein selectively blocking comprises transmitting a first portion of the reflected light and blocking a second portion of the reflected light.

41. The method of claim 40, wherein the first portion comprises rays obtained at a first angle from a point on the retina, and the second portion comprises rays obtained at a second angle from the point on the retina.

42. The method of claim 38, further comprising:

blocking at least some Purkinje reflections from reaching the imaging path.

43. The method of claim 38, wherein the convergent light is generated via one or more of optics, rilling, apertures, and colored diodes.

44. A method of imaging a retina of an eye of a subject, comprising using the imaging system of any of claims 1, 27 or 28 to illuminate and image the retina.

45. The method of claim 44, wherein the subject has, or is suspected to have, diabetes.

46. The method of claim 44, wherein the subject is a human subject over the age of 60 years old.

47. The method of claim 44, wherein the pupil of the eye being imaged in the subject is dilated.

48. The method of claim 44, wherein the pupil of the eye being imaged in the subject is dilated to less than or equal to 2.5 mm.

49. The method of claim 44 wherein the subject has, or is suspected to have, one or more of the following: diabetes including diabetic retinopathy and/or macular edema,

glaucoma, optic cup/disc asymmetry, macular drusen, retinal pigment epithelial changes, age-related macular degeneration, hypertensive retinopathy, retinal emboli, retinal vein occlusion, preretinal hemorrhage, vitreous hemorrhage, traction retinal detachment, choroidal nevus, choroidal lesions, epiretinal membrane, asteroid hyalosis, chorioretinal scar/atrophy, optic disc hemorrhage, and a macular hole.

50. A method of diagnosing a condition, comprising using the imaging system of any of claims 1, 27 or 28 to illuminate and image the retina in the eye of a subject suspected of having the condition, the condition relating to one or more of the following: diabetes including diabetic retinopathy and/or macular edema, glaucoma, optic cup/disc asymmetry, macular drusen, retinal pigment epithelial changes, age-related macular degeneration, hypertensive retinopathy, retinal emboli, retinal vein occlusion, preretinal hemorrhage, vitreous hemorrhage, traction retinal detachment, choroidal nevus, choroidal lesions, epiretinal membrane, asteroid hyalosis, chorioretinal scar/atrophy, optic disc hemorrhage, and a macular hole.

51. A method of imaging a retina of an eye of a subject, comprising:

generating convergent light via an illumination path of a retinal imaging system;

directing the convergent light through an illumination portion of the eye, the illumination portion of the eye being segregated from an imaging portion of the eye;

receiving reflected light via the imaging portion of the eye;

passing the reflected light through an imaging path to an image capturing device; and

producing an image of the retina based on the reflected light.

52. A method of diagnosing a condition, comprising performing the method of claim 51 on a subject suspected of having the condition, the condition relating to one or more of the following: diabetes including diabetic retinopathy and/or macular edema, glaucoma, optic cup/disc asymmetry, macular drusen, retinal pigment epithelial changes, age-related macular degeneration, hypertensive retinopathy, retinal emboli, retinal vein

occlusion, preretinal hemorrhage, vitreous hemorrhage, traction retinal detachment, choroidal nevus, choroidal lesions, epiretinal membrane, asteroid hyalosis, chorioretinal scar/atrophy, optic disc hemorrhage, and a macular hole.

53. A method of imaging the retina of an eye of a subject, comprising using the ophthalmoscope of claim 14 to illuminate and image the retina.

54. The method of claim 53 ,wherein the subject has, or is suspected to have, diabetes.

55. The method of claim 53, wherein the subject is a human subject over the age of 60 years old.

56. The method of claim 53, wherein the pupil of the eye being imaged in the subject is dilated.

57. The method of claim 53, wherein the pupil of the eye being imaged in the subject is dilated to less than or equal to 2.5 mm.

58. The method of claim 53, wherein the subject has, or is suspected to have, one or more of the following: diabetes including diabetic retinopathy and/or macular edema assessment, glaucoma, optic cup/disc asymmetry, macular drusen, retinal pigment epithelial changes, age-related macular degeneration, hypertensive retinopathy, retinal emboli, retinal vein occlusion, preretinal hemorrhage, vitreous hemorrhage, traction retinal detachment, choroidal nevus, choroidal lesions, epiretinal membrane, asteroid hyalosis, chorioretinal scar/atrophy, optic disc hemorrhage, and a macular hole.

59. A method of diagnosing a condition comprising using the ophthalmoscope of claim 14 to illuminate and image the retina in the eye of a subject suspected of having the condition, the condition relating to one or more of the following: diabetes including

diabetic retinopathy and/or macular edema, glaucoma, optic cup/disc asymmetry, macular drusen, retinal pigment epithelial changes, age-related macular degeneration, hypertensive retinopathy, retinal emboli, retinal vein occlusion, preretinal hemorrhage, vitreous hemorrhage, traction retinal detachment, choroidal nevus, choroidal lesions, epiretinal membrane, asteroid hyalosis, chorioretinal scar/atrophy, optic disc hemorrhage, and a macular hole.

60. A method of diagnosing a condition using a retinal imaging system comprised of an illumination path which receives light, and causes the light to penetrate a pupil of an eye at a spot on the pupil, and an imaging path which receives reflected light from a retina of the eye and which transmits the reflected light to an imaging device, the method comprising:

rotating at least part of the illumination path relative to the eye; and

generating images via the imaging device that include shadows indicative of details of the eye.

61. The method of claim 60, wherein the images comprise video.

62. The method of claim 60, wherein the condition relates to one or more of the following: diabetes including diabetic retinopathy and/or macular edema assessment, glaucoma, optic cup/disc asymmetry, macular drusen, retinal pigment epithelial changes, age-related macular degeneration, hypertensive retinopathy, retinal emboli, retinal vein occlusion, preretinal hemorrhage, vitreous hemorrhage, traction retinal detachment, choroidal nevus, choroidal lesions, epiretinal membrane, asteroid hyalosis, chorioretinal scar/atrophy, optic disc hemorrhage, and a macular hole.